



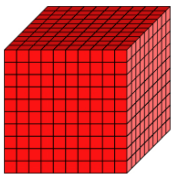
Year 2 and 3 Maths Strategies & Representations:

Understanding the Importance of Representations

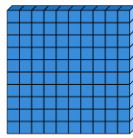
Mathematical representations help children visualize and understand concepts, making learning more accessible. In Years 2 and 3, students use visual tools to build confidence and fluency in key maths strategies.

Place Value: The Foundation of Maths

- **What is Place Value?**
 - Numbers are broken into **tens** and **ones** (or **hundreds, tens, and ones** for Year 3).
 - Helps in understanding addition, subtraction, multiplication, and division.
- **Tools Used:**
 - **Base 10 Blocks:** Physical objects to demonstrate number breakdowns.



1000



100



10

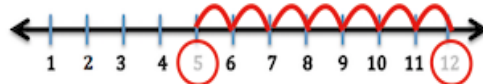
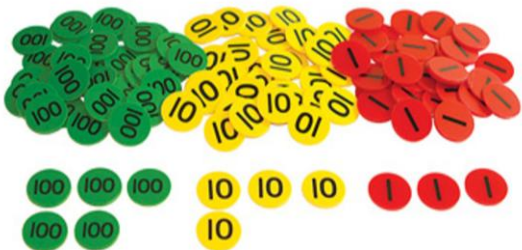


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- **Place Value Charts:** Show the value of digits within a number.

Thousands	Hundreds	Tens	Ones
Th	H	T	O
4	5	2	8

- **Counters & Number Lines:** Aid in counting forwards and backwards.



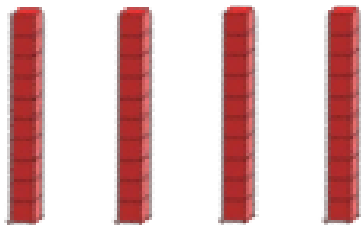
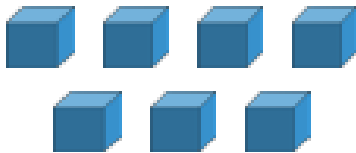
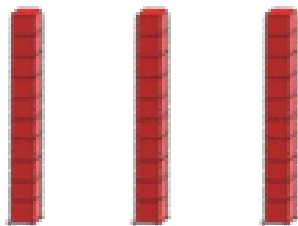

$$5 + 7 = 12$$

Addition & Subtraction

Year 2 - Key Skills:

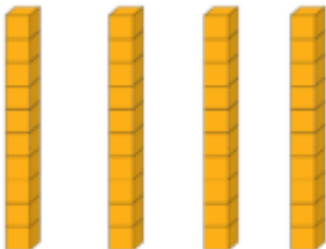
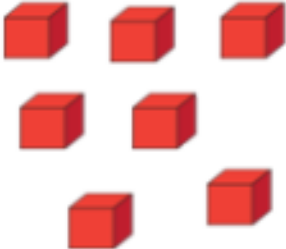
- Adding and subtracting numbers up to 100.
- Using number bonds to 10 and 20.
- Understanding inverse relationships (e.g., if $12 + 8 = 20$, then $20 - 8 = 12$).
- Solving simple word problems.
- **Method: CPA Approach**
 - **Concrete:** Using objects like blocks or counters.
 - **Pictorial:** Drawing representations (e.g., part-whole models).
 - **Abstract:** Using numbers and symbols only.

1. $47 + 31 =$

Tens	Ones
	
	

	T	O
	4	7
+	3	1

Tens and Ones Place Value Mat

Tens	Ones
	

Year 3 - Adding using the formal method

Example: $247 + 86$

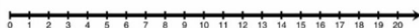
Step 1: Write the numbers in columns (Hundreds, Tens, Ones)

Step 2: Add Ones ($7 + 6 = 13$, put 3 in Ones column, carry over 1 to Tens)



H	T	O
2	4	7
	8	6

Step 3: Add Tens ($4 + 8 = 12$, plus 1 carried over = 13, put 3 in Tens, carry 1 to Hundreds)



Step 4: Add Hundreds ($2 + 1 = 3$)

Answer: $247 + 86 = 333$

Year 3 - Subtraction formal method with borrowing

Example: $345 - 78$

Step 1: Write the numbers in columns

Step 2: Subtract Ones ($5 - 8$ is not possible, so we borrow 1 from Ten's column, making it $15 - 8 = 7$)



H	T	O
3	4	5
	7	8

Step 3: Subtract Tens ($3 - 7$ is not possible, so we borrow 1 from Hundreds, making it $13 - 7 = 6$)

Step 4: Subtract Hundreds ($2 - 0 = 2$)

$345 - 78 = 267$

- **Formal Column Method:**
 - Example: $247 + 86$
 - Align numbers in Hundreds, Tens, and Ones columns.
 - Add from right to left, carrying numbers where necessary.
 - Example: $345 - 78$ (Borrowing method)
 - Subtract digits from right to left, borrowing when needed.

Key Skills

- Add and subtract three-digit numbers using the formal column method (with carrying and borrowing)
- Use mental strategies for larger numbers
- Solve word problems using bar models
- Estimate and check answers using rounding

Multiplication & Division

Year 2

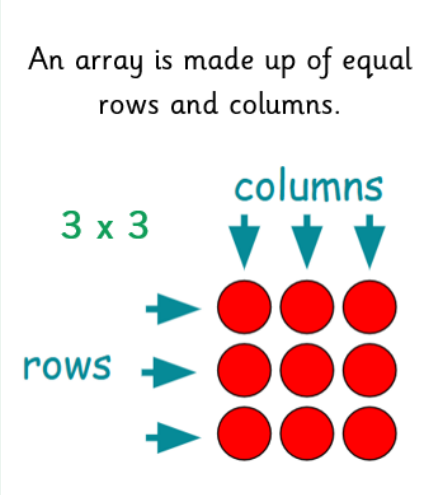
- **Key Concepts:**
 - Multiplication as repeated addition (e.g., $3 \times 4 = 4 + 4 + 4$).
 - Division as grouping and sharing.
 - Using **arrays** (arrangements in rows/columns) to visualize multiplication and division.
 - Learning and recalling **2, 5, and 10 times tables**.
- **Example:**
 - $4 \times 3 = 12$ (4 groups of 3)
 - $12 \div 3 = 4$ (Sharing 12 into 3 equal groups)

Arrays: An array is a way of arranging objects in rows and columns to help children understand multiplication and division visually. An array is made up of equal rows and columns.
(An image of a 3x3 array with red dots, labelled with rows and columns)

Grouping: Children learn that multiplying is making equal groups.

Sharing: Division can be done by sharing objects equally.

An array is made up of equal rows and columns.




3×3

rows

columns

$4 \times 3 = 12$
 $12 \div 3 = 4$



Year 3

- Formal Written Methods:

Year 3- Multiplication using the formal methods

Step 1: Write the Numbers in Columns
- Align the 2-digit number above the 1-digit number.

Step 2: Multiply the Ones-
Multiply 4 (Ones) \times 3 = 12. Write 2 in the Ones place and carry over 1 to the Tens.

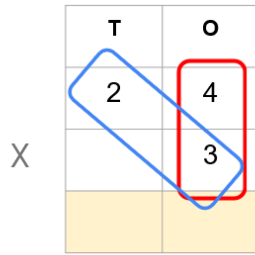
Step 3: Multiply 2 (Tens) \times 3 = 6.
Add the carried-over 1 ($6 + 1 = 7$). Final answer: 72

Step 1 > **Step 2**
Multiply the ones > Multiply the tens

$$\begin{array}{r} 79 \\ \times 2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 79 \\ \times 2 \\ \hline 158 \end{array}$$

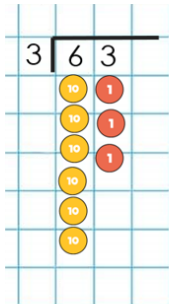
Remember to regroup when necessary.



Multiplication Example: 24×3

- Multiply the ones ($4 \times 3 = 12$, carry 1).
- Multiply the tens ($2 \times 3 = 6$, add the carried 1 = 7).
- Answer: 72.

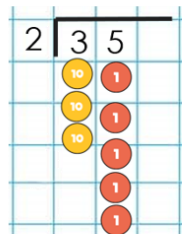
Year 3- Division using the formal methods



Look at the tens (60): Group the yellow counters into sets of 3. You have 2 groups of 30 in each set.

Look at the ones (3): Group the red counters into sets of 3. You have 1 group of ones \rightarrow That's 1 per group.

Regrouping & Remainders



Look at the tens (30): Group the yellow counters into sets of 2. You have 1 full group of 20. Leftover tens (10) are exchanged for 10 ones.

Look at the ones (15): Group the red counters into sets of 2. You have 7 full groups with 1 counter left over. That leftover counter is a **remainder**.

Division Example: $63 \div 3$

- Divide tens first, then ones.
- Understanding remainders.

Key Skills:

- Recall and use 3, 4, and 8 times tables
- Use the formal written method for multiplication (2-digit \times 1-digit) • Use bar models and arrays for problem-solving
- Solve division using short division (bus stop method) •
- Work with division problems that have remainders

Key Vocabulary

Year 2

- **Addition:** Add, Sum, Total, Plus.
- **Subtraction:** Take away, Difference, Fewer.
- **Multiplication:** Groups of, Lots of, Times.
- **Division:** Sharing, Equal Groups.

Year 3

- **Place Value:** Hundreds, Tens, Ones.
- **Operations:** Borrowing, Carrying, Remainder.
- **Multiplication & Division:** Bar Model, Quotient, Times Table.

Ways to Support at Home

- Use everyday objects to practice maths (e.g., sharing food equally, counting money).
- Encourage drawing number lines, arrays, or part-whole models.
- Play games counting in 2s, 5s, and 10s.
- Solve real-life problems together (e.g., "We have 15 apples. If we eat 4, how many are left?").
- Times table rockstars

Curriculum coverage :

Topic	Year 2	Year 3
Place Value	<ul style="list-style-type: none"> • Recognise tens and ones in 2-digit numbers • Count in steps of 2, 5, and 10 • Compare and order numbers up to 100 • Partition numbers (e.g., $45 = 40 + 5$) • Identify odd and even numbers 	<ul style="list-style-type: none"> • Recognise hundreds, tens, and ones in 3-digit numbers • Count in steps of 50 and 100 • Compare and order numbers up to 1,000 • Round numbers to the nearest 10 or 100 • Use a number line and place value grid
Addition & Subtraction	<ul style="list-style-type: none"> • Add and subtract two-digit numbers using mental methods • Use number bonds to 20 and apply to 100 • Solve problems using number lines, part-whole models, and column method (without carrying/borrowing) 	<ul style="list-style-type: none"> • Add and subtract three-digit numbers using the formal column method (with carrying and borrowing) • Use mental strategies for larger numbers • Solve word problems using bar models • Estimate and check answers using rounding
Multiplication & Division	<ul style="list-style-type: none"> • Recall and use 2, 5, and 10 times tables • Understand multiplication as repeated addition • Use arrays and number lines for multiplication • Solve division by sharing and grouping • Recognise the relationship between multiplication and division 	<ul style="list-style-type: none"> • Recall and use 3, 4, and 8 times tables • Use the formal written method for multiplication (2-digit \times 1-digit) • Use bar models and arrays for problem-solving • Solve division using short division (bus stop method) • Work with division problems that have remainders